

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Cannon et al.	Docket No.:	1244.025
Patent No.:	<u>7254188</u>	Issued:	08/07/2007
Serial No.:	10/737,323	Filed:	12/16/2003

Title: METHOD AND SYSTEM FOR MODULATING AND DETECTING HIGH  
DATARATE SYMBOL COMMUNICATIONS

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

### REQUEST FOR A CERTIFICATE OF CORRECTION

Sir:

In reviewing the original Letters Patent, Applicants note minor errors made by the Applicants in the specification and in dependent claim 8 of the above-referenced United States Patent. This Request for a Certificate of Correction for an issued patent is filed with the appropriate fee and Certificate of Correction Form PTO/SB/44.

Please consider the following remarks, and issue a corrected patent with the corrected typographical errors.

### **Changes to the Specification:**

In the paragraph beginning at col. 2, line 11, please amend the last identification of a point at col. 2, line 19 by adding a single negative sign before the last occurrence of “K” on that line as follows:

The constellation has point values with two points of differing amplitude and having a zero reference phase, and two other points having corresponding amplitude to the first two points with a 180 degree reference phase. The remaining four points are located symmetrically above and below the lower amplitude points of the zero reference phase and 180 degree reference phase set. The points may have complex locations substantially equal to  $(K/2,0)$ ,  $(3K/2,0)$ ,  $(K/2,K)$ ,  $(-K/2,K)$ ,  $(-K/2,0)$ ,  $(-3K/2,0)$ ,  $(-K/2,-K)$  and  $(K/2,-K)$ , where  $K$  is an arbitrary amplitude reference and further including all phase rotations of the constellation.

In the paragraph beginning at col. 7, line 44, please amend the last identification of a point at col. 7, line 55 by adding a single negative sign before the last occurrence of “K” on that line as follows:

The Snowflake constellation may be described as 8 points on an equally spaced rectangular grid such that 4 points are in a horizontal line. To these are added 2 pairs of additional points equally spaced above and below the center 2 points in the horizontal line. Although we define this constellation (and subsequent mappings, metrics and phase detector) in terms of horizontal and vertical spacing, the performance is independent of any fixed rotation, and therefore rotations of the constellation represent equivalent modulation schemes. The depicted rotation includes the points having complex locations substantially equal to  $(K/2,0)$ ,  $(3K/2,0)$ ,  $(K/2,K)$ ,  $(-K/2,K)$ ,  $(-K/2,0)$ ,  $(-3K/2,0)$ ,  $(-K/2,-K)$  and  $(K/2,-K)$ , where  $K$  is an arbitrary amplitude reference representing the spacing between the points on the I axis (horizontal axis) of the constellation diagram. Variations from the set of points described above will tend to reduce performance, but there may be advantages in reducing the amplitudes of the  $(\pm 3K/2,0)$  points to reduce the peak power level, and it should be understood that minor variations in the phase or amplitude of the points are equivalent values contemplated by the present invention.

**Changes to Dependent Claim 8:**

At dependent claim 8, beginning at col. 11, line 8, please amend the claim as follows:

8. The receiver of claim 1, wherein a grouping associated with a first bit of said three-bit symbol decode divides said constellation between a first subgroup including said first, second, fifth and ~~seventh~~ sixth points and a second subgroup comprising all points that are not members of said first subgroup, wherein a grouping associated with a second bit of said three-bit symbol decode divides said constellation between a third subgroup including said first, third, ~~seventh~~ sixth and eighth points and a fourth subgroup comprising all points that are not members of said third subgroup, and wherein a grouping associated with a third bit of said three-bit symbol decode divides said constellation between a fifth subgroup including said first, third, fifth and ~~sixth~~ seventh points and a sixth subgroup comprising all points that are not members of said fifth subgroup, and wherein is said log-likelihood.

### REMARKS

In the Specification at col. 2, line 19 and at col. 7, line 55, a negative (-) sign was unintentionally and inadvertently missed in identifying the last of each of the points for the locations in the constellation diagram in good faith and without intent to mislead. Currently each of the lists repeats a point in the list because of the missing sign and addition of the sign will make the list match the constellations shown in FIG. 5B, FIGs. 6 and FIG. 7, as well as the language of independent claim 1.

In Dependent Claim 8, reference to the sixth and seventh points were inadvertently reversed. Patentee unknowingly made this inadvertent reversal in good faith and without intent to mislead. Replacing "sixth" with "seventh" and "seventh" with "sixth" in this claim will make this dependent claim 8 coordinate with the examples set forth in the specification in relation to FIGs. 6 and 7 using the constellation point order of claim 1.

The USPTO is invited to telephone the undersigned regarding this matter.

Respectfully submitted,

Date: April 22, 2009

By: /Kenneth C. Booth/signed

Kenneth C. Booth

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**UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION**

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PATENT NO. : 7,254,188  
APPLICATION NO.: 10/737,323  
ISSUE DATE : Aug. 7, 2007  
INVENTOR(S) : Cannon et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Please replace the paragraph beginning at col. 2, line 11 with the following paragraph:

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This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: **Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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Please replace claim 8 with the following language for claim 8:

8. The receiver of claim 1, wherein a grouping associated with a first bit of said three-bit symbol decode divides said constellation between a first subgroup including said first, second, fifth and sixth points and a second subgroup comprising all points that are not members of said first subgroup, wherein a grouping associated with a second bit of said three-bit symbol decode divides said constellation between a third subgroup including said first, third, sixth and eighth points and a fourth subgroup comprising all points that are not members of said third subgroup, and wherein a grouping associated with a third bit of said three-bit symbol decode divides said constellation between a fifth subgroup including said first, third, fifth and seventh points and a sixth subgroup comprising all points that are not members of said fifth subgroup, and wherein is said log-likelihood.

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
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